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VERIFICATION OF A TRANSLATION

I, Susan ANTHONY BA, ACIS,

Director of RWS Group Ltd, of Europa House, Marsham Way, Gerrards Cross, Buckinghamshire, England declare:

That the translator responsible for the attached translation is knowledgeable in the German language in which the below identified international application was filed, and that, to the best of RWS Group Ltd knowledge and belief, the English translation of the amended sheets of the international application No. PCT/EP2004/008395 is a true and complete translation of the amended sheets of the above identified international application as filed.

I hereby declare that all the statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the patent application issued thereon.

Date: December 20, 2005

Signature :



For and on behalf of RWS Group Ltd

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Patent claims

1. A plastics product of high strength and flexibility,

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characterized in that

the plastics product is a crosslinked semifinished product or a crosslinked molded material based on interpenetrating networks and comprises from 10 to 10 50% by weight of at least one crosslinked thermoplastic and from 90 to 50% by weight of at least one crosslinked melamine resin ether, where the crosslinked semifinished product or the cross-linked molded material has been produced from a mixture composed of thermoplastics which comprise, based on the total weight of the thermoplastics, from 0.1 to 2% by weight of a thermally decomposing free-radical generator, and melamine resin ethers which comprise, based on the total weight of the melamine resin ethers, from 0.1 to 2% by weight of a hardener.

2. The plastics product as claimed in claim 1,
25 characterized in that at least one thermoplastic is

an ethylene-vinyl acetate copolymer,
a partially hydrolyzed ethylene-vinyl acetate copolymer whose vinyl acetate content is from 5 to 30 50% by weight,
an ethylene-acrylate copolymer,
an ethylene-methacrylate copolymer whose ethylene content is from 60 to 95 mol%,
a hydroxy-end-group-terminated aliphatic poly-
35 ester,
a polycaprolactone,
a poly(meth)acrylate whose content of hydroxy-

C₁-C₆-alkyl (meth)acrylate in the molecule is from 2 to 10 mol%, from 5 to 20% by weight of a vinyl acetate or C₁-C₈-alkyl acrylate,
5 a C₁-C₈-alkyl-methacrylate-grafted polyethylene, an ethylene-C₃-C₈ olefin copolymer whose ethylene content is from 80 to 95 mol%, a styrene-butadiene-styrene block copolymer, a styrene-ethylene-butadiene-styrene block copolymer and/or a thermoplastic polyurethane.
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3. The plastics product as claimed in claim 1 or 2, wherein at least one melamine resin ether has a weight-average molecular weight of from 1500 to 200 000 and a molar melamine/formaldehyde ratio of 5 from 1:1.5 to 1:4.
4. The plastics product as claimed in at least one of the preceding claims, characterized in that it comprises, based in each case on the plastics 10 products, from 10 to 70% by weight of fillers, adsorber materials, inorganic fibers, and/or synthetic fibers, from 1 to 15% by weight of hydrophobicizers, from 1 to 10% by weight of flame retardants, from 0.1 to 2% by weight of pigments, 15 from 0.1 to 2% by weight of stabilizers, and/or from 0.1 to 5% by weight of auxiliaries.
5. The plastics product as claimed in claim 4, characterized in that the fillers and adsorber 20 materials are Al_2O_3 , $\text{Al}(\text{OH})_3$, SiO_2 , barium sulfate, calcium carbonate, glass beads, siliceous earth, mica, powdered quartz, powdered slate, hollow microbeads, carbon black, talc, phyllosilicates, 25 molecular sieves, rock flower, chalk, talc, cellulose, and/or cyclodextrines, preferred fillers being phyllosilicates of the type represented by montmorillonite, bentonite, kaolinite, muscovite, hectorite, fluorohectorite, kanemite, revdite, grumantite, ilerite, saponite, beidelite, nontronite, stevensite, laponite, 30 taneolite, vermiculite, halloysite, volkonskoite, magadite, rectorite, kenyaite, sauconite, borofluorophlogopite, and/or synthetic smectites, and preferred adsorber materials being phyllosilicates of the type represented by montmorillonite, bentonite, hectorite, molecular sieves of 35

types A, X, Y, and in particular 5A, silicon-dioxide-based adsorbers, and/or hollow microbeads.

6. The plastics product as claimed in claim 4 or 5, characterized in that at least one hydrophobicizer is an organosilicon compound of the type represented by organosilanols, organosiloxanes, organosilanes, organoaminosilanes, amino-end-group- or hydroxy-end-group-terminated polyorganosiloxanes; surface-fluorinated SiO_2 nanoparticles, polytetrafluoroethylene nanoparticles, and/or imide-group-containing copolymers of ethylenically unsaturated $\text{C}_4\text{-C}_{20}$ dicarboxylic anhydrides.
- 15 7. The plastics product as claimed in at least one of the preceding claims, characterized in that the plastics product is an injection molding or is a tube, sheet, or profiles.

8. A process for the production of a plastics product, as claimed in claim 1,

characterized in that

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the plastics product is produced via shaping and crosslinking of pseudoplastic melts of mixtures of melamine resin ethers and of thermoplastics.

10 9. The process as claimed in claim 8, characterized in that the plastics product is produced by an extruder process in which, in a first stage of the process, in a first extruder segment, melt mixtures composed of melamine resin ethers and of 15 thermoplastics are prepared, below and then melt mixture is devolatilized after homogenization, and then, in the second extruder segment, hardener and also decomposing free-radical generator are 20 fed and homogenized in the melt mixture, and in a second stage of the process, the melt mixture is either discharged from the extruder, and pelletized, the molding composition pellets being melted in a 25 third stage of the process and the pseudoplastic melt being processed in presses, extruders or injection-molding machines, with crosslinking, to give semifinished products or molded materials, or is heated in a third extruder segment, the pseudoplastic melt being discharged, with crosslinking, 30 through a die, and being drawn off in the form of a semifinished product.

35 10. The process as claimed in claim 9, characterized in that the extruder process has at least one extruder whose length is from 30 to 60 D, equipped

with side feed equipment for solid and liquid substances and vacuum devolatilization.

- 5 11. The process as claimed in claim 9 or 10, characterized in that the melt mixtures composed of melamine resin ethers and of thermoplastics are prepared at melt temperatures of from 100 to 170°C.
- 10 12. The process as claimed in at least one of claims 9 to 11, characterized in that the mixture components are fed collectively into the feed hopper, or at least one melamine resin ether is fed into the thermoplastic melt after melting of the thermoplastic by way of side-feed equipment
- 15 or

at least one thermoplastic is fed into the thermoplastic melt after melting of the melamine resin ether by way of side-feed equipment.

5 13. The process as claimed in at least one of claims 9 to 12, characterized in that, in the second extruder segment, melt temperatures of from 100 to 150°C have been set into the melt mixture.

10 14. The process as claimed in at least one of claims 9 to 13, characterized in that, in the second extruder segment, hardener and/or thermally decomposing free-radical generator are used in the form of masterbatch comprising from 60 to 90% by 15 weight of thermoplastics.

15. The process as claimed in at least one of claims 9 to 14, characterized in that fillers, adsorber materials, inorganic fibers, synthetic fibers, 20 flame retardants, pigments, stabilizers, and/or auxiliaries are fed into the extruder in the first and/or second extruder segment.

25 16. The process as claimed in at least one of claims 9 to 15, characterized in that, in the third extruder segment, a temperature of from 150 to 240°C has been set.

30 17. The process as claimed in claim 8, characterized in that the plastics product is produced by a sintering process.

35 18. The process as claimed in claim 17, characterized in that, in a first stage of the process, mixtures composed of at least one melamine resin ether and of at least one thermoplastic are sintered in

high-speed mixers, the sintered mixture is cooled, and, after cooling, hardener and/or thermally decomposing free-radical generator are applied in a drum mixer to the sinter mixture, and, in a 5 second stage of the process, the sinter mixture is melted, and the pseudoplastic melt is processed in presses, extruders, or injection-molding machines, with crosslinking, to give semifinished products or molded materials.

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19. The process as claimed in claim 17 or 18, characterized in that fillers, adsober materials, inorganic fibers, and/or synthetic fibers are sintered concomitantly in the first stage of the process.

20. The process as claimed in at least one of claims 17 to 19, characterized in that the residence time in the high-speed mixer is from 3 to 30 min and the final temperature is from 90 to 160°C.

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21. The process as claimed in at least one of claims 17 to 20, characterized in that the temperatures to which cooling of the sinter mixture takes place are from 50 to 120°C.

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22. The process as claimed in at least one of claims 17 to 21, characterized in that, in the second stage of the process, the sinter mixture is melted at temperatures of from 150 to 240°C.

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23. The process as claimed in at least one of claims 17 to 22, characterized in that, in the first stage of the process, flame retardants, pigments, stabilizers, and/or auxiliaries are applied in a drum mixer.

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24. The process as claimed in at least one of claims 8 to 23, characterized in that, at least one melamine resin ether is an etherified melamine resin condensate which is free from hydroxymethyleneamino groups bonded to the triazine rings of the melamine resin condensate and from -NH-CH₂-O-CH₂-NH- groups linking triazine rings, and in which C₁-C₁₈ alcohols and/or diols with molecular weights of from 62 to 20 000 have been used for the etherification of the hydroxymethylamino groups.

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25. The process as claimed in at least one of claims 8 to 24, characterized in that, as hardener for at least one melamine resin ether, acidifiers of the

type represented by blocked sulfonic acids, aliphatic C₄-C₁₈ carboxylic acids; aromatic C₇-C₁₈ carboxylic acids; alkali metal salts or ammonium salts of phosphoric acid; C₁-C₁₂-alkyl ethers or C₂-C₈-hydroxyalkyl esters of C₇-C₁₄-aromatic carboxylic acids, or of inorganic acids; salts of melamine or of guanamines with C₁-C₁₈-aliphatic carboxylic acids; anhydrides, half esters or half amides of C₄-C₂₀ dicarboxylic acids; half esters or half amides of copolymers composed of ethylenically unsaturated C₄-C₂₀ dicarboxylic anhydrides and of ethylenically unsaturated monomers of the type represented by C₂-C₂₀ olefins and/or C₈-C₂₀ vinylaromatics; and/or salts of C₁-C₁₂ alkylamines and, respectively, alkanolamines with C₁-C₁₈-aliphatic, C₇-C₁₄-aromatic, or alkylaromatic carboxylic acids, and also with inorganic acids of the type represented by hydrochloric acid, sulfuric acid, or phosphoric acid, are used.

26. The process as claimed in at least one of claims 8 to 25, characterized in that, as thermally decomposing free-radical generator for the crosslinking of the thermoplastic component, free-radical generators whose thermal decomposition has been concluded below 210°C are used, of the type represented by acyl peroxides, alkyl peroxides, hydroperoxides, peroxycarbonates, and/or peresters.

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27. The use of the plastics product as claimed in any of claims 1 to 7 in the vehicle industry, mechanical engineering, electrical engineering, and electronics.